

REMARKS

Claims 53-104 are pending with claims 53, 68, 73, 76, 88, and 100 being independent claims. By this amendment, claims 68, 73, and 100 are amended. No new matter is added.

I. Allowable Subject Matter

Applicant gratefully acknowledges the finding that claims 53-67 and 88-99 are allowed, and that claims 74, 75, 81, and 87 would be allowed if re-written in independent form including all of the limitations of their base claim and any intervening claims. Claims 74, 75, 81, and 87 are not re-written at this time as Applicant believes that independent claims 73 and 76, from which these claims depend, are independently patentable for the reasons described below.

II. Rejections Under 35 U.S.C. §102 are Overcome

The Office Action rejects claims 68-73 under 35 U.S.C. §102 over U.S. Patent No. 4,091,880 (Troutner). Additionally, the Office Action rejects claims 76, 79, 82, 83, 84, 85, and 86 over U.S. Patent No. 4,935,027 (Yoon). Applicant amends independent claims 68 and 73 to obviate these rejections.

A. Independent Claims 68 and 73

Claim 68, and claim 73 as amended, each define a suture wire supply cartridge having, among other features, a length of suture wire, a housing or holder to store at least a portion of the length of suture wire, a guide pathway for the suture wire, and at least one opening that exposes a side of a portion of the suture wire and that receives at least a portion of a drive mechanism that moves the suture wire along the guide pathway. Claim 68 is amended to recite that actuation of the drive mechanism draws suture wire from the holder.

Troutner teaches an instrument that acts much like a drill to insert surgical wire into bone. The instrument of Troutner has a collet that can grip different sizes of surgical wire in a manner that prevents slippage between the collet and wire during wire installation. (See generally col. 1, lines 46-48). Applicant understands that surgical wire is inserted into the nose portion (34) of the instrument of Troutner after the head assembly is adjusted to receive the wire, although Troutner is not explicit on this issue. (See generally, column 3, lines 3-15). In this

regard, surgical wire is supplied to the Troutner device in a manner similar to how a drill bit is inserted into a conventional, household drill. Nowhere does Troutner teach surgical wire passing through the collet tube (64) or any other portions of the instrument – much less a drive mechanism that moves the suture wire along the guide pathway, as recited in each of claims 68 and 73, or a drive mechanism that draws suture wire from a holder, as claim 68 is amended to recite. To the contrary, the device of Troutner prevents slippage between suture wire and a collet of the instrument.

Accordingly, Troutner does not teach all of the limitations of either of claims 68 or 73. Withdrawal of the rejection of claims 68, 73, and any claims depending therefrom is respectfully requested.

B. Independent Claim 76

Claim 76 defines an instrument that has, among other features, a drive mechanism that moves suture wire with force sufficient to exit a first jaw, penetrate tissue and move through an opening in a second jaw.

Nowhere does Yoon teach a drive mechanism that moves wire with force sufficient to penetrate tissue. Rather, the instrument of Yoon has forceps arms with sharp tips that pierce tissue upon bringing the tips together. (Col. 3, lines 57-59). A suture material advancement mechanism advances suture material through the forceps arms that provide a passageway through the tissue, such that the suture material need not itself penetrate the tissue.

Accordingly, Yoon does not teach all of the limitations of claim 76. Withdrawal of the rejection of claim 76, and any claims depending therefrom is respectfully requested.

III. Rejections under 35 U.S.C. §103 are Overcome

The Office Action rejects claims 76-78 and 100-104 under 35 U.S.C. §103 over Yoon in view of U.S. Patent No. 5,207,697 (Carusillo) and U.S. Patent No. 5,895,395 (Yeung).

A. Independent Claim 76

As described above, claim 76 defines a suturing instrument that has, among other features, a drive mechanism that moves suture wire with force sufficient to exit a first jaw, penetrate tissue and move through an opening in a second jaw.

As described above in Section II(B) of this amendment, Yoon does not teach or disclose suture wire that penetrates tissue – much less a drive mechanism that moves suture wire with force sufficient to exit a first jaw, penetrate tissue, and move through an opening in a second jaw, as recited by claim 76. The flexible filament of Yeung does not itself penetrate the tissue, but rather is passed through a passageway provided by three hollow needles (1, 10, 7). The hollow portions of two of the needles (1, 10), arranged parallel to one another, are connected by the third hollow needle (7) to provide a passageway for flexible filament (22) to pass through tissue. Nowhere does Yeung teach or disclose a drive mechanism that moves suture wire with force sufficient to exit a first jaw, penetrate tissue, and move through an opening in a second jaw suture wire penetrating tissue. In this manner, Yeung fails to cure the deficiency of Yoon.

Carusillo discloses a surgical tool that can be used with a variety of types of tool carriers (23), such as chucks for drills, reamers, wire drivers, and saws. (Col. 4, lines 53-58). Although Carusillo briefly mentions that the surgical tool can be used with a wire driver, there is no teaching or disclosure that the surgical tool includes a drive mechanism that moves the suture wire does in fact, or is even capable of exiting a first jaw, penetrating tissue, and moving through an opening in a second jaw. In this manner, Carusillo also fails to cure the deficiency of Yoon or of Yeung.

Although Carusillo mentions wire driving as part of surgical drilling operations (col. 1, lines 39-42), one of skill would not be led to combine such a wire driver with the devices of Yoon or Yeung. The devices of Yoon and Yeung can be used to pass suture material through curved lumens. One of skill would appreciate that the suture material requires a degree of flexibility to pass through such curved lumens. One of skill would also expect that the suture wire used in a drilling operations, like that of Carusillo, would require a certain amount of stiffness, although this is not explicitly discussed. One would not look to a device used with

drilling operations, such as in Carusillo, to modify devices involved with passing flexible material through curved lumens, such as those of Yoon and Yeung.

In addition, one of ordinary skill in the art would not have had a reasonable expectation of success in modifying the devices of Yoon or Yeung to have a drive mechanism that moves suture wire with force sufficient to exit a first jaw, penetrate tissue and move through an opening in a second jaw. As mentioned above, Yoon teaches providing a suture material suitable for passing through lumens of curved forceps arms and for tying a knot, which requires suture material with a certain amount of flexibility. Similarly, Yeung teaches providing flexible material for passing through a curved hollow needle. One of skill would expect that suture wire used in drilling operations, as mentioned by Carusillo, would require a stiff suture wire. It is unclear from Carusillo, or any of the other applied references, whether such stiff suture wire could be successfully passed through the devices of Yoon or Yeung without damaging the wire or the device itself. Based on Carusillo, Yoon, and Yeung, it is unclear whether the asserted modification would operate as intended, and thus there would have been no reasonable expectation of success in making the asserted modification.

Accordingly, the rejection of claim 76 is improper. Withdrawal of the rejection of claim 76, and any claims depending therefrom is respectfully requested.

B. Independent Claim 100

Claim 100, as amended defines a method of suturing that includes, among other aspects, twisting together the free end of the suture wire extending from the tissue and a remaining portion of the suture wire by rotating a portion of the suturing instrument so as to secure the free end of the suture material to the remaining portion of the suture wire.

Neither Yoon, Carusillo, nor Yeung teach or disclose twisting together suture material. More particularly, none of these references teach or disclose twisting together suture material by rotating a portion of the suturing instrument, as claim 100 has been amended to recite.

Accordingly, the rejection of claim 100 is overcome. Withdrawal of the rejection of claim 76, and any claims depending therefrom is respectfully requested.

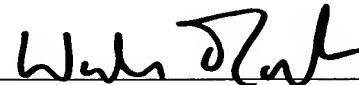
CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 23/2825, under Order No. D0188.70162US01 from which the undersigned is authorized to draw.

Respectfully submitted,

By:


Walt Norfleet, Reg. No.: 52,078
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000

Docket No.: D0188.70162US01

Date: April 4, 2005

x04/03/05x